

Abstract Submitted  
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**Main ion toroidal rotation in the edge of the Alcator C-Mod tokamak** A. GRAF, University of California at Davis, D. WHYTE, K. MARR, Plasma Science and Fusion Center, MIT, M. MAY, P. BEIERSDORFER, Lawrence Livermore National Laboratory — The main ion toroidal rotation and temperature is measured spectroscopically at the inner wall midplane plasma edge  $\pm 1$  cm around the last closed flux surface. A four channel high resolution transmission grating spectrometer monitors the Doppler shift and width of the deuterium Balmer beta emission line shape at  $4860 \text{ \AA}$ , every 8 ms for the duration of the discharge. The measurement is localized using a radially oriented neutral deuterium gas puff which enhances the emission via charge exchange with the fuel ions. Comparisons with impurity rotation and temperature from B V deduced in a similar fashion will be given under various plasma conditions. Also, a proof of principle measurement of helium rotation and temperature in an L-mode helium majority plasma has been accomplished by monitoring the diagnostic neutral beam induced charge exchange enhancement of the Paschen  $\alpha$  transition in He II at  $4686 \text{ \AA}$ . This work was performed under the auspices of the U. S. Department of Energy by the Lawrence Livermore National Laboratory under contract DE-AC52-07NA27344.

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